

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
PERMITTING and COMPLIANCE DIVISION  
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM  
(MPDES)**

**Fact Sheet for permit modification**

Permittee:	City of Bozeman
Permit No.:	MT0022608
Receiving Water:	East Gallatin River
Facility Information:	Bozeman Wastewater Treatment Plant
Mailing Address:	255 Moss Bridge Road Bozeman, MT 59718
Contact:	Tom Adams, Superintendent
Phone:	(406) 586-9159
Fax:	(406) 586-7017
E-mail:	<a href="mailto:wwtp@bozeman.net">wwtp@bozeman.net</a>
Fee Information:	
Type:	Publicly Owned Treatment Works, Major
Number of Outfalls:	1 (For Fee Determination only)
Outfall - Type:	001 – Plant Discharge

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**I. Permit Status**

The City of Bozeman Wastewater Treatment Plant (WWTP) MPDES permit was issued on August 31, 2006, becoming effective on October 1, 2006. It was modified on March 5, 2008. The modified permit requirements were identified in the Fact Sheet (FS) dated February 14, 2008.

A letter from the City of Bozeman received on November 8, 2007 (with updates received on December 11, 2007 and March 27, 2008) requested two MPDES permit revisions: to change the location of Outfall 001 to a point more than 1,000 feet upstream from the current outfall, and to revise the *Escherichia coli* (*E. coli*) Bacteria limit to reflect the language in the Administrative Rules of Montana (ARM) 17.30.624(2). Other than a typographic correction to specify that monitoring was required for carbonaceous biological oxygen demand (CBOD<sub>5</sub>) rather than biological oxygen demand (BOD<sub>5</sub>), this permit major modification is limited in scope to only those two conditions, as required by ARM 17.30.1365(4)(b).

## **II. Facility Information**

### **a. Current Facility Description**

The current WWTP consists of primary sedimentation with secondary treatment utilizing complete mix, activated sludge with fine bubble aeration. The hydraulic capacity of the facility is rated at a daily average flow of 5.8 million gallons per day (mgd). The effluent is discharged to the East Gallatin River through Outfall 001, currently located along the northeastern portion of the facility permitted at 45°43'45"N latitude and 111°04'19"W longitude.

### **b. Proposed Facility Description**

Bozeman is subject to a compliance schedule for upgrading the WWTP by September 30, 2011 as detailed in the March 5, 2008 MPDES permit (Section I.F.). Phase I of the upgrade will entail construction of the following new facilities: headworks; primary influent lift station; two biological nutrient removal (BNR) trains; a Return Activated Sludge/Waste Activated Sludge (RAS/WAS) pumping station; a parallel outfall line; ultraviolet (UV) disinfection facilities; one additional anaerobic digester; and a new laboratory/administration building. Under ARM 17.30.1342(12), Bozeman is required to provide notice to the Department prior to certain planned physical changes to the WWTP; therefore, the Department will review and make any other necessary modifications to the permit at that time.

This permit modification is limited in scope to the following:

- Revise the *E. Coli* limit's averaging time to align with ARM 17.30.624(2);
- Change the location of Outfall 001 to a new location (45°43'27.85"N latitude and 111°04'7.22" W longitude). Since Bozeman is allowed to only discharge through a permitted outfall (Montana Code Annotated (MCA) 75-5-605), the permittee must render the current Outfall 001 inoperable when the new Outfall is installed and made operable. The Department recognizes that there may be a short time during construction and start-up activities where Bozeman may need to re-route the discharge back to the current Outfall 001. This will need to be handled through specific correspondence with the Department at that time; and
- Correct the typographical error in the monitoring requirement to reflect CBOD<sub>5</sub> rather than BOD<sub>5</sub>.

### III. Proposed Technology-Based Effluent Limitations (TBEL)

#### a. Applicability to Technology-Based Effluent Limits

Limits established in the previous permit were based on National Secondary Standards for carbonaceous biological oxygen demand (CBOD<sub>5</sub>), total suspended solids (TSS), Percent Removal, and pH, as required by ARM 17.30.1344(2)(h) and 40 CFR 133.102. These limits will be maintained in the modified permit. The current request will not affect technology-based limits.

#### b. Nondegradation Allocated Loads

Nondegradation allocations for the Bozeman WWTP were determined under previous permitting actions for CBOD<sub>5</sub>, TSS, total nitrogen and total phosphorous based on the average design flow of 5.78 mgd. These mass-based limits will be maintained in the modified permit. The current modification will not affect nondegradation allocated loads.

### IV. Water Quality-Based Effluent Limitations (WQBELs)

#### a. *Escherichia coli* (*E. coli*) Bacteria: The applicable standards for *E. coli* are:

- April 1 through October 31, of each year, the geometric mean number of the microbial species *E. coli* must not exceed 126 colony forming units (cfu) per 100 milliliters (mL), nor are 10% of the total samples during any 30-day period to exceed 252 cfu per 100 mL [ARM 17.30.623(2)(a)(i)]; and
- November 1 through March 31, of each year, the geometric mean number of *E. coli* shall not exceed 630 cfu per 100 mL and 10% of the samples during any 30-day period may not exceed 1,260 cfu per 100 mL [ARM 17.30.623(2)(a)(ii)].

Bozeman's permit currently requires compliance with the 252 and 1,260 cfu per 100 mL as ***maximum daily limits*** for summer and winter, respectively. Bozeman requested that the Department modify the permit to more accurately reflect the water quality standards. The Department reviewed the request, and determined that the appropriate averaging time is average weekly and average monthly discharge as provided under ARM 17.30.1345(6)(b).

Bozeman's permit will be modified to remove the maximum daily limits and replace them with the following average weekly *E. coli* limits:

- April 1 through October 31: 252 cfu/100 mL
- November 1 through March 31: 1,260 cfu/100 mL

b. Mixing Zone

The current source-specific mixing zone granted by the Department for meeting the chronic ammonia standard was downstream 710 feet and 42 feet in width from the original Outfall 001. The Department reviewed whether the request to relocate Outfall 001 more than 1,000 feet upstream would impact the decision to grant the mixing zone.

It is reasonable to assume that the seven day, ten-year (7Q10) low flow of the stream segment without the discharge would remain the same between the current Outfall 001 and its proposed new location since no major tributaries enter the East Gallatin River between the two outfall locations. In addition, observations of an aerial photograph indicate that the stream width is very similar. Since this permit modification is limited to review of only the relocation of Outfall 001, and any future effluent changes would be reviewed under a separate modification, the Department determined it was reasonable to approve the outfall relocation and maintain the approved mixing zone for chronic ammonia at a point 710 feet downstream from the new outfall.

V. Final Effluent Limitations

Effluent limits developed in the permit issued on August 31, 2006 and modified on March 5, 2008 will remain fully effective and enforceable. No changes were made based on this modification, other than revising the short-term averaging time for *e.coli*, to the following:

Effluent Limitations: Outfall 001				
Parameter	Units	Average Monthly Limit <sup>1</sup>	Average Weekly Limit <sup>1</sup>	Maximum Daily Limit <sup>1</sup>
Escherichia coli Bacteria <sup>2, 4</sup>	No./100ml	126	252	--
Escherichia coli Bacteria <sup>3, 4</sup>	No./100ml	630	1,260	--
Footnotes: 1. See Definition section at end of permit for explanation of terms. 2. This limitation applies from April 1 through October 31. 3. This limitation applies from November 1 through March 31. 4. Report Geometric Mean if more than one sample is collected in the reporting period.				

VI. Information Sources

Clean Water Act (CWA), 33 U.S.C. 1251, *et seq.*

US Code of Federal Regulations, 40 CFR Part 122 -The National Pollutant Discharge Elimination System.

US Code of Federal Regulations, 40 CFR Part 133 –Secondary Treatment Regulation.

Montana Water Quality Act, MCA 75-5-101, *et seq.*

ARM Title 17, Chapter 30, Sub-chapter 13 - Montana Pollutant Discharge Elimination System (MPDES) Permits.

Montana Pollutant Discharge Elimination System permit No.: MT0022608, Issued on August 31, 2006, and modified March 5, 2008.

Prepared by: Christine Weaver and Tom Reid, August 21, 2008.